SMA6J Series

Description

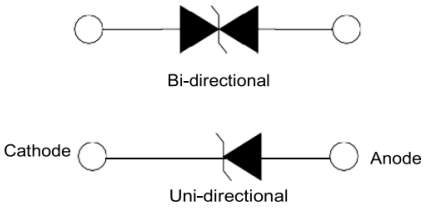
The SMA6J series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SMA6J series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer Applications.

Uni-directional Bi-directional

Features

- Case: DO-214AC(SMA)
- Excellent clamping capability
- 600 W peak pulse power capability with a 10/1000 μs waveform
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Fast response time: typically less than 1.0ps from 0 Volts to VB min.
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

Functional Diagram



Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25ºC by 10/1000μs Waveform	P_{PK}	600	W
Power Dissipation on Infinite Heat Sink at T_L=50°C	P_D	3.3	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave[1]	I_{FSM}	60	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only[2]	V_F	3.5	V
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

NOTES:

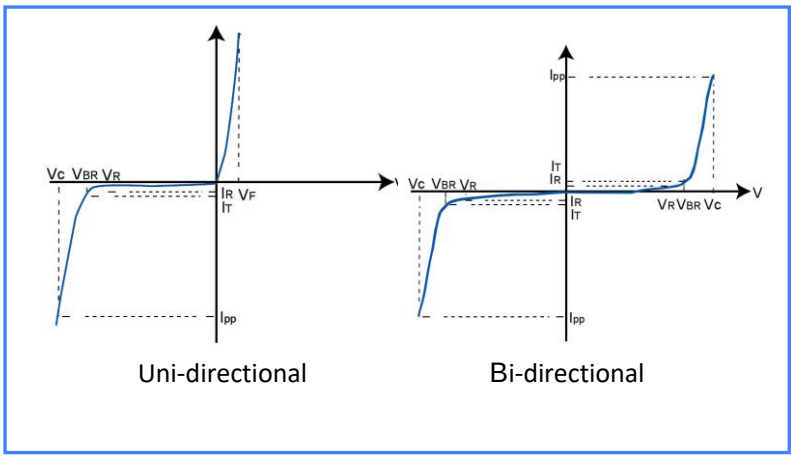
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Electrical characteristics (TA = 25 °C unless otherwise noted)

Part Number (Bi)	Part Number (Uni)	MARKING		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@I_T		Test Current I_T(mA)	Maximum Reverse Leakage I_R @ V_R(μA)	Maximum Peak Pulse Current Ipp(A)	Maximum Clamping Voltage V_C @I_{PP}(V)
		BI	UNI		Min .V	Max .V				
SMA6J5.0CA	SMA6J5.0A	6WE	6AE	5.0	6.40	7.00	10	500	65.2	9.2
SMA6J6.0CA	SMA6J6.0A	6WG	6AG	6.0	6.67	7.37	10	500	58.3	10.3
SMA6J 6.5CA	SMA6J 6.5A	6WK	6AK	6.5	7.22	7.90	10	300	53.6	11.2
SMA6J7.0CA	SMA6J7.0 A	6WM	6AM	7.0	7.78	8.60	10	200	50.0	12.0
SMA6J7.5CA	SMA6J 7.5A	6WP	6AP	7.5	8.33	9.21	1	100	46.5	12.9
SMA6J8.0CA	SMA6J 8.0A	6WR	6AR	8.0	8.89	9.83	1	50	44.1	13.6
SMA6J8.5CA	SMA6J8.5 A	6WT	6AT	8.5	9.44	10.40	1	20	41.7	14.4
SMA6J9.0CA	SMA6J9.0 A	6WV	6AV	9.0	10.00	11.10	1	10	39.0	15.4
SMA6J10CA	SMA6J10 A	6WX	6AX	10.0	11.10	12.30	1	5	35.3	17.0
SMA6J11CA	SMA6J11 A	6WZ	6AZ	11.0	12.20	13.50	1	1	33.0	18.2
SMA6J12CA	SMA6J12 A	6XE	6BE	12.0	13.30	14.70	1	1	30.2	19.9
SMA6J13CA	SMA6J13A	6XG	6BG	13.0	14.40	15.90	1	1	27.9	21.5
SMA6J14CA	SMA6J14A	6XK	6BK	14.0	15.60	17.20	1	1	25.9	23.2
SMA6J15CA	SMA6J15A	6XM	6BM	15.0	16.70	18.50	1	1	24.6	24.4
SMA6J16CA	SMA6J16A	6XP	6BP	16.0	17.80	19.70	1	1	23.1	26.0
SMA6J17CA	SMA6J17A	6XR	6BR	17.0	18.90	20.90	1	1	21.8	27.6
SMA6J18CA	SMA6J18A	6XT	6BT	18.0	20.00	22.10	1	1	20.6	29.2
SMA6J20CA	SMA6J20A	6XV	6BV	20.0	22.20	24.50	1	1	18.6	32.4
SMA6J22CA	SMA6J22A	6XX	6BX	22.0	24.40	26.90	1	1	16.9	35.5
SMA6J24CA	SMA6J24A	6XZ	6BZ	24.0	26.70	29.50	1	1	15.4	38.9
SMA6J26CA	SMA6J26A	6YE	6CE	26.0	28.90	31.90	1	1	14.3	42.1
SMA6J28CA	SMA6J28A	6YG	6CG	28.0	31.10	34.40	1	1	13.2	45.4
SMA6J30CA	SMA6J30A	6YK	6CK	30.0	33.30	36.80	1	1	12.4	48.4
SMA6J33CA	SMA6J33A	6YM	6CM	33.0	36.70	40.60	1	1	11.3	53.3
SMA6J36CA	SMA6J36A	6YP	6CP	36.0	40.00	44.20	1	1	10.4	58.1
SMA6J40CA	SMA6J40A	6YR	6CR	40.0	44.40	49.10	1	1	9.3	64.5
SMA6J43CA	SMA6J43A	6YT	6CT	43.0	47.80	52.80	1	1	8.7	69.4
SMA6J45CA	SMA6J45A	6YV	6CV	45.0	50.00	55.30	1	1	8.3	72.7
SMA6J48CA	SMA6J48A	6YX	6CX	48.0	53.30	58.90	1	1	7.8	77.4
SMA6J51CA	SMA6J51A	6YZ	6CZ	51.0	56.70	62.70	1	1	7.3	82.4
SMA6J54CA	SMA6J54A	6ZE	6RE	54.0	60.00	66.30	1	1	6.9	87.1
SMA6J58CA	SMA6J58A	6ZG	6RG	58.0	64.40	71.20	1	1	6.4	93.6
SMA6J60CA	SMA6J60A	6ZK	6RK	60.0	66.70	73.70	1	1	6.2	96.8
SMA6J64CA	SMA6J64A	6ZM	6RM	64.0	71.10	78.60	1	1	5.8	103.0
SMA6J70CA	SMA6J70A	6ZP	6RP	70.0	77.80	86.00	1	1	5.3	113.0

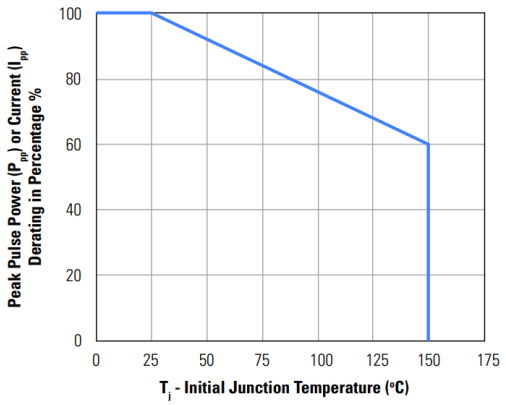
SMA6J75CA	SMA6J75A	6ZR	6RR	75.0	83.30	92.10	1	1	5.0	121.0
SMA6J78CA	SMA6J78A	6ZT	6RT	78.0	86.70	95.80	1	1	4.8	126.0
SMA6J85CA	SMA6J85A	6ZV	6RV	85.0	94.4	104.0	1	1	4.4	137.0
SMA6J100CA	SMA6J100A	6ZZ	6RZ	100.0	111.0	123.0	1	1	3.7	162.0
SMA6J110CA	SMA6J110A	6VE	6SE	110.0	122.0	135.0	1	1	3.4	177.0
SMA6J120CA	SMA6J120A	6VG	6SG	120.0	133.0	147.0	1	1	3.1	193.0
SMA6J300CA	SMA6J300A	6UE	6TE	300.0	335.0	371.0	1	1	1.3	486.0

I-V Curve characteristics

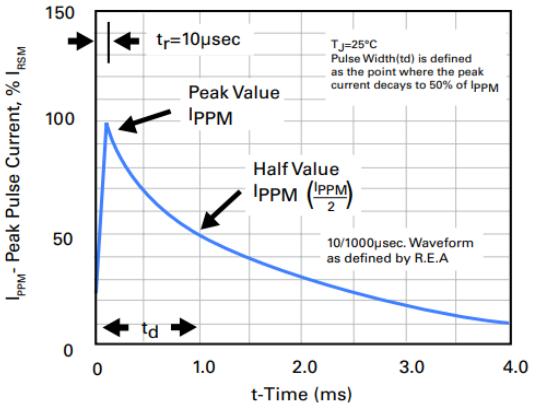


Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @V_{RWM}
V_{BR}	Breakdown Voltage @ I_T(Test Current)

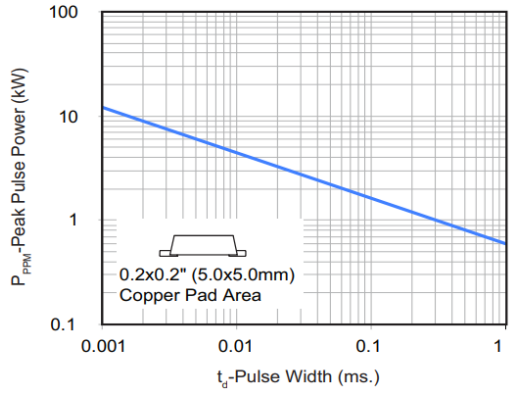
Rating & Characteristic Curves



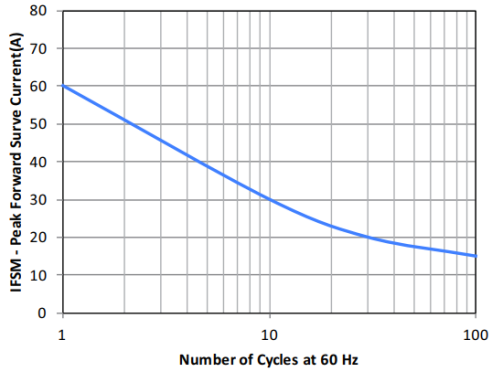
1.Peak pulse power derating curve



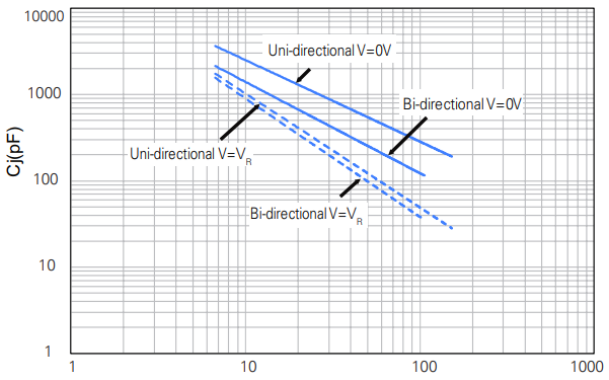
2. Pulse waveform



3. Peak pulse power rating curve

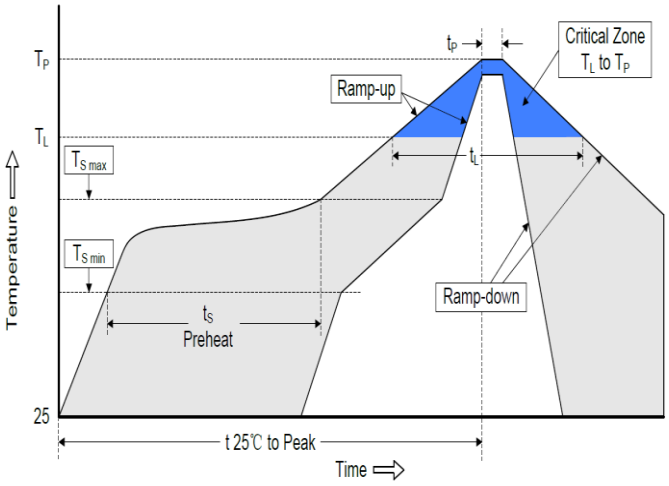


4. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



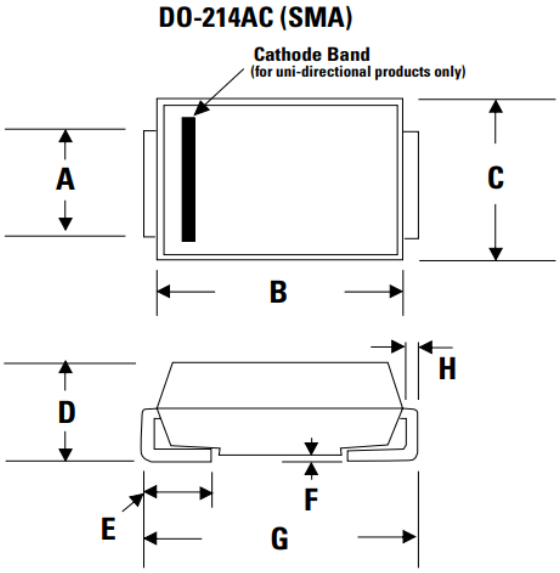
5. Typical Junction Capacitance

Soldering parameters



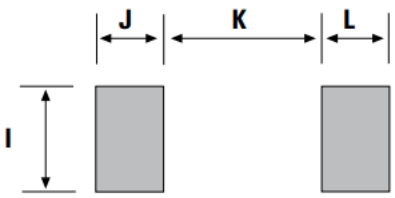
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max)(t_S)	 150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3°C/second max.
Time maintained above: - Temperature (T_L) - Time (t_L)	 217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6°C /second max.
Time 25°C to Peak Temperature	8 minutes max.

Package outline dimensions in millimeters

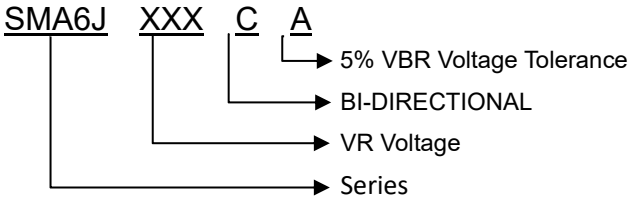


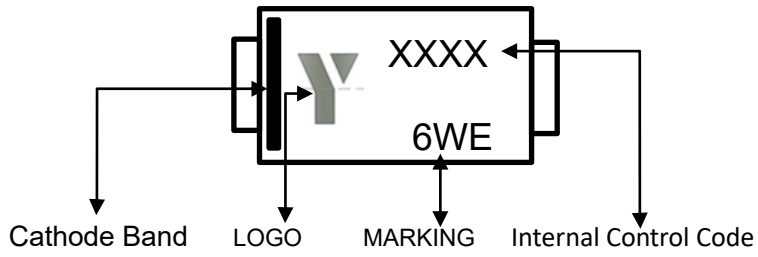
Dimensions	Millimeter	
	Min	Max
A	1.250	1.650
B	3.990	4.600
C	2.400	2.790
D	1.900	2.290
E	0.780	1.520
F	-	0.203
G	4.800	5.280
H	0.152	0.305
I	1.800	-
J	2.100	-
K	-	2.100
L	2.100	-

Mounting Pad Layout



Part number code & Marking code





(for Uni-directional products only)

Disclaimer

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.